

REMARKS

Claims 1-18 were pending in the present application. Claims 1-3 and 10-18 stand withdrawn from consideration and claims 4-9 stand rejected. By virtue of this response, no claims have been cancelled, amended, or added. Accordingly, claims 4-9 are currently under consideration.

Rejections under 35 USC § 103

Claims 4-9 stand rejected under 35 USC § 103(a) as allegedly being unpatentable over Miyamae (U.S. Patent No. 6,866,969) in view of JP10-10308.

Applicants respectfully traverse the rejection and submit that the Examiner has failed to present a *prima facie* case of obviousness because the combination fails to disclose all of the features of the present claims, and further the combination fails to provide a teaching, suggestion, or motivation to combine and modify the references to meet the features the present claims (*see, e.g.*, MPEP §§ 2143, 2143.01).

The Examiner states, in part, “Miyamae teaches a photomask that has a transparent substrate (42), and a phase grating structure from a plurality of grooves of a fixed pitch (P) formed on said substrate, wherein at least either the depth or width of the respective grooves of the phase grating is made to bear the exposure pattern,” and additionally quotes (at least generally) claim 1 of Miyamae.

Applicants submit that Miyamae fails to disclose or suggest a photomask having “a plurality of mask regions for forming diffraction gratings of respective regions of a hologram, the mask regions being composed of a non-light-transmitting mask portion and a light-transmitting portion,” as recited by claim 4 and 7 (Emphasis added). Initially, it is noted that the Examiner has not alleged in the Office Action that Miyamae discloses the above emphasized features. In contrast, and as similarly stated by the Examiner, Miyamae discloses a transparent substrate 42 having a

plurality of grooves formed therein (and which is used with a light sensitive substrate 67 (col. 7, lines 36-50; col. 9, lines 13-col. 10, line 25; Figs. 1, 6a-6d, and 7). Miyamae fails to disclose, however, that transparent substrate 42 includes a “non-light-transmitting mask portion and a light transmitting portion,” as presently recited and the rejection should be withdrawn.

Further, the grooves formed in substrate 42 appear to have the function of separating the transmitted light into “a 0 order light 64 and ±first order light 65.” (Col. 9, lines 65-67). In particular, Miyamae discloses that when photomask 42 is “irradiated with the exposure light 62, the transmitted light is separated into a 0 order light 64 and a ±first order light 65 with the phase grating. The 0 order light 64 advances straight forward, and the diffraction angle of the first order light 35.6 degrees... the ±first order light 65 deviates outward from the projection lens 66, and only the 0 order light 64 enters the projection lens 66.” (Col. 9, lines 65-col. 10, lines 6; Fig. 7). (Emphasis added). Accordingly, Miyamae appears to teach away from the features of the present claims (i.e., having a non-light-transmitting mask portion, as well as to features relating to first-order diffraction efficiency discussed below); or at the very least, the combination of Miyamae with JP-10-10308 fails to suggest modifying the disclosure of Miyamae to meet the features of the present claims.

Therefore, for at least these reasons Miyamae fails to disclose or suggest a photomask having regions “composed of a non-light-transmitting mask portion and a light-transmitting portion,” as recited by independent claims 4 and 7. Further, the addition of JP10-10308 fails to cure the deficiency of Miyamae, nor is the addition of JP10-10308 alleged to cure this deficiency. Thus, the combination of Miyamae and JP10-10308 fails to disclose or suggest the features of the present claims and the rejection must be withdrawn.

Additionally, the Examiner states that Miyamae differs from the present claims with regard to recited features relating to “first-order diffraction efficiency” and relies on JP10-10308 for “teaching adjusting the diffraction efficiency of the first order diffracted light.” Applicants respectfully disagree and submit the Examiner is misinterpreting JP10-10308, or in the alternative,

is engaging in impermissible hindsight analysis in the combination and modification of the references to meet the features of the present claims.

The Abstract of JP10-10308 discloses, for example, “setting the diffraction efficiency of zero order diffracted light and +1st order diffracted light higher than the diffraction efficiency of the diffracted light of any other order and specifying the respective values of the diffraction efficiency.” Initially, it appears that JP10-10308 is describing the diffraction efficiency for a “hologram lens 107”, and not a “photomask” as presently recited. Further, even if combined with Miyamae, neither reference suggests using a light-exposure amount as recited by claims 4 and 7. For example, there is no suggestion for using “a light-exposure amount kept in a level where respective hologram regions having diffraction gratings are equal in first-order diffraction efficiency,” as recited by claim 4, or using “a light-exposure amount kept in a level where a hologram region having a diffraction grating with a shorter grating interval is made larger in first-order diffraction efficiency than a hologram region having a diffraction grating with a longer grating interval,” as recited by claim 7. Accordingly, the combination of references fails to disclose or suggest the specific features of claims 4 and 7 and the rejection must be withdrawn.

Finally, the rationale for the combination and modification to Miyamae proposed by the Examiner is lacking because the rationale does not provide for a sufficient teaching, suggestion, or motivation to modify the disclosure of Miyamae to meet the features of the present claims. (MPEP § 2143.01, e.g., “The prior art must suggest the desirability of the claimed invention”). Even assuming the rationale provided by the Examiner suggests combining the references or adjusting the diffraction efficiency of the first order of diffracted light, the Examiner has not provided any evidence or line of reasoning that the reference suggests the desirability for modifying the system of Miyamae in light of JP10-10308 to meet the features of claims 4 and 7. In particular, even if the two references are combined, there is no suggestion for modifying Miyamae to use a light-exposure amount in different hologram regions as specifically recited by the claims.

In fact, Applicants submit that the combination fails to suggest the desirability of the features presently recited. In particular, as described above, Miyamae discloses that when

photomask 42 is “irradiated with the exposure light 62, the transmitted light is separated into a 0 order light 64 and a \pm first order light 65 with the phase grating. The 0 order light 64 advances straight forward, and the diffraction angle of the first order light 35.6 degrees... the \pm first order light 65 deviates outward from the projection lens 66, and only the 0 order light 64 enters the projection lens 66.” (Col. 9, lines 65-col. 10, lines 6; Fig. 7). (Emphasis added). Accordingly, Miyamae appears to teach away from the features of the present claims (i.e., relating to first-order diffraction efficiency), and at the very least, Miyamae in combination with JP-10-10308 fails to suggest modifying the disclosure to meet the features of the present claims.

Accordingly, for at least these reasons, the combination of references fails to disclose or suggest each and every feature of the present claims, and further the Examiner has failed to provide a sufficient teaching, suggestion, or motivation for one of ordinary skill in the art to have modified the references to meet the features of the present claims. Therefore, Applicants request the rejection is withdrawn and claims 4-9 be allowed.

CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 275412001800. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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Respectfully submitted,

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